

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): ~~Method~~ A method of detecting a plurality of symbols ($d_k(i)$) transmitted by or for a plurality K of users, each symbol belonging to a modulation constellation and being the subject of a spectral spreading by means of a spreading sequence, ~~the said~~ said method comprising:

a filtering step ($310_1, \dots, 310_K$) adapted for supplying a complex vector ($y(i), \tilde{y}(i)$) characteristic of ~~the said~~ said received signal, ~~characterised in that~~ wherein ~~the said~~ said complex vector is decomposed into a first vector ($y^R(i), \tilde{y}^R(i)$) and a second vector ($y^I(i), \tilde{y}^I(i)$) and in that at least the closest ~~neighbors~~ neighbours of the first and second vectors are sought ($330, 331$) within a lattice of points (Λ, Ω) generated by ~~the said~~ said modulation constellations, the transmitted symbols being estimated from the components of ~~the said~~ said closest ~~neighbors~~ neighbours.

Claim 2 (Currently Amended): ~~Detection~~ The detection method according to Claim 1, ~~characterised in that~~ wherein the spreading sequences ($s_k(t)$) consist of real multiples ($s_k^0(t)$) of the same complex coefficient (σ).

Claim 3 (Currently Amended): The detection ~~Detection~~ method according to Claim 1 or 2, ~~characterised in that~~ wherein the search is limited to a first set of points in the lattice belonging to a first predetermined zone (Σ_R) around the first vector and a second set of points in the lattice belonging to a second predetermined zone (Σ_I) around the second vector.

Claim 4 (Currently Amended): The detection ~~Detection~~ method according to Claim 1 or 2, ~~characterised in that~~ wherein the search is limited to a first set of points in the lattice

belonging to a first predetermined zone (Σ_R) around the origin and a second set of points in the lattice belonging to a second predetermined zone (Σ_I) around the origin.

Claim 5 (Currently Amended): ~~The detection~~ Detection-method according to Claim 3 or 4, ~~characterised in that~~ wherein the ~~said~~ said first and second predetermined zones are spheres.

Claim 6 (Currently Amended): ~~The detection~~ Detection-method according to ~~one of the preceding claims~~ Claim 1, ~~characterised in that~~ wherein the search for the closest neighbor ~~neighbour~~ of the first vector is effected on a plurality of components thereof, the search being limited for each of the ~~said~~ said components to an interval defined for a lower bound and an upper bound, ~~the said~~ said bounds being chosen so that ~~the said~~ said interval does not comprise points relating to symbols which cannot belong to the modulation constellation.

Claim 7 (Currently Amended): ~~The detection~~ Detection-method according to ~~one of the preceding claims~~ Claim 1, ~~characterised in that~~ wherein the search for the closest neighbor ~~neighbour~~ of the second vector is effected on a plurality of components thereof, the search being limited for each of the ~~said~~ said components to an interval defined for a lower bound and an upper bound, ~~the said~~ said bounds being chosen so that ~~the said~~ said interval does not comprise points relating to symbols which cannot belong to the modulation constellation.

Claim 8 (Currently Amended): ~~The detection~~ Detection-method according to ~~one of the preceding claims~~ Claim 1, ~~characterised in that~~ wherein, prior to the search for the closest neighbor ~~neighbour~~, the first vector ($y^R(i)$) is subjected to a matrix processing (320) aimed at substantially decorrelating the different noise components thereof.

Claim 9 (Currently Amended): ~~The detection~~ Detection-method according to ~~one of the preceding claims~~ Claim 1, characterised in that ~~wherein~~, prior to the search for the closest ~~neighbors~~ neighbour, the second vector ($y^l(i)$) is subjected to a matrix processing (321) aimed at substantially decorrelating the different noise components thereof.

Claim 10 (Currently Amended): ~~The detection~~ Detection-method according to ~~one of the preceding claims~~ Claim 1, characterised in that ~~wherein~~ the ~~said~~ said search step is extended to the search for a first set of points which are the closest ~~neighbors~~ neighbours of the ~~said~~ said first vector, referred to as first ~~neighbors~~ neighbours, and a second set of points which are closest to the ~~said~~ said second vector, referred to as second ~~neighbors~~ neighbours, and in that the transmitted symbols are estimated flexibly from symbols generating the ~~said~~ said first and second ~~neighbors~~ neighbours and distances separating the ~~said~~ said first ~~neighbors~~ neighbors from the first vector on the one hand and the ~~said~~ said second ~~neighbors~~ neighbors from the ~~said~~ said second vector on the other hand.

Claim 11 (Currently Amended): ~~The detection~~ Detection-method according to ~~one of the preceding claims~~ Claim 1, characterised in that ~~wherein~~ the contributions of each user to the signals obtained by the adapted filtering step are determined from the estimated symbols and in that, for a given user k, the contributions of the other users corresponding to the symbols already estimated are eliminated at the output of the filtering step.

Claim 12 (Currently Amended): ~~The detection~~ Detection-method according to ~~one of Claims 1 to 10~~ Claim 1, characterised in that ~~wherein~~ the contributions of each user to the received signal are determined (340) from the estimated symbols and in that, for a given user

k , the contributions of the other users corresponding to the symbols already estimated are eliminated at the input of the filtering step.

Claim 13 (Currently Amended): ~~The detection~~ Detection method according to ~~one of Claims 1 to 10~~ Claim 1, characterised in that ~~wherein~~, the symbols of the ~~said~~ said K users being transmitted synchronously, ~~the said~~ said lattice of points is of dimension K .

Claim 14 (Currently Amended): ~~The detection~~ Detection method according to Claim ~~11 or 12~~, characterised in that ~~wherein~~, the symbols of the ~~said~~ said K users being transmitted asynchronously and propagating along a plurality of paths, the dimension of the lattice is equal to the number of symbols of the different users which may interfere and are not yet estimated.

Claim 15 (Currently Amended): ~~Device~~ A device for detecting a plurality of symbols ($d_k(i)$) transmitted by or for a plurality K of users, each symbol belonging to a modulation constellation and being the subject of a spectral spreading by a spreading sequence, the device comprising means for implementing the method claimed according to one of the preceding claims.

Claim 16 (Currently Amended): ~~Receiver~~ A receiver for a DS-CDMA mobile telecommunication system comprising a detection device according to Claim 15.